

HP StorageWorks MSL Library Extender

Getting started guide and replacement instructions

See page 9 for instructions on removing or replacing the Extender.

⚠ WARNING!

The HP StorageWorks MSL2024 Tape Library weighs up to 15.6 kg (34.3 lb) without media and up to 20.4 kg (44.9 lb) with media (24 cartridges). The MSL4048 Tape Library weighs up to 24.6 kg (54.1 lb) without media and up to 34.2 kg (75.2 lb) with media (48 cartridges). The MSL8096 Tape Library weighs up to 46.6 kg (102.7 lb) without media and up to 68.8 kg (151.7 lb) with media (96 cartridges).

- Observe local health and safety requirements and guidelines for manual material handling.
- Remove all tapes to reduce the overall weight of the device.
- Obtain adequate assistance to lift and stabilize the device during installation or removal.

⚠ WARNING!

When placing the Library into or removing the Library from a rack, to reduce the risk of personal injury or damage to equipment:

- Extend the rack's leveling jacks to the floor.
- Ensure that the full weight of the rack rests on the leveling jacks.
- Install stabilizing feet on the rack.
- Extend only one rack component at a time. Racks may become unstable if more than one component is extended.

© Copyright 2009 Hewlett-Packard Development Company, L.P.

First edition: April 2009

The information in this document is subject to change without notice.

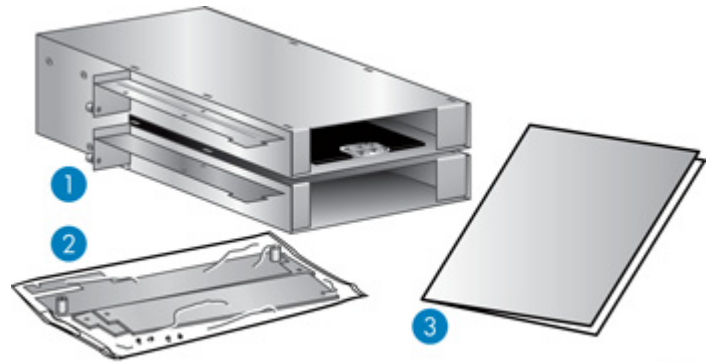
Printed in the US

www.hp.com



1 Identifying product components

Verify that you received the following:



11925

1. Library Extender
2. Packet containing two half-height drive bay covers, four screws, and the alignment gauge.
3. Getting started guide



* A Q 7 4 6 - 9 6 0 0 2 *

2 Downloading product documentation

For information about configuring and operating the extended library, download the *HP StorageWorks Library Extender user guide* and the *HP StorageWorks MSL2024, MSL4048, and MSL8096 user and service guide* from the HP website:

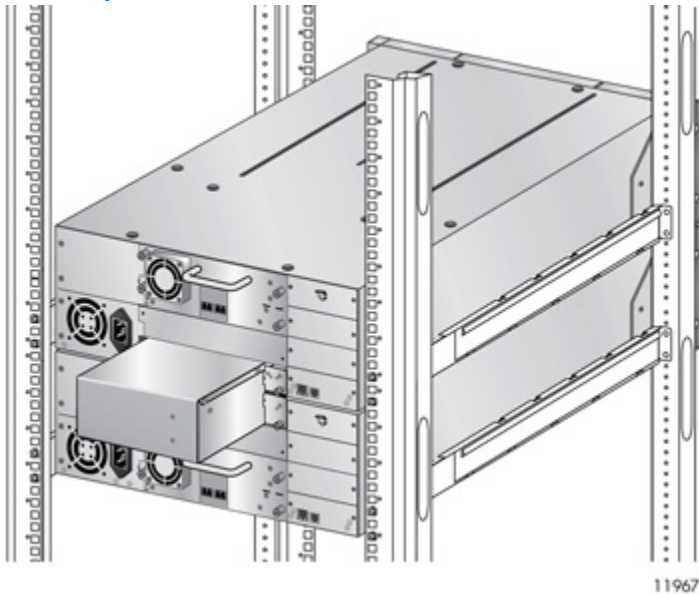
1. Browse to <http://www.hp.com/support/tape>.
2. In the **Tape Storage and Media** section, select **Tape Libraries**.
3. Select **HP StorageWorks MSL4048 Tape Library**.

NOTE:

The same manuals are used for the MSL2024, MSL4048, and MSL8096 Tape Libraries.

4. In the **Resources for HP StorageWorks MSL4048 Tape Library** section, select **Manuals**.
5. In the **User guide** section, download the following documents:
 - *HP StorageWorks Library Extender User guide*
 - *HP StorageWorks MSL2024, MSL4048, and MSL8096 User and service guide*
 - *HP StorageWorks 1/8 G2 and MSL Encryption Kit User guide*, if the Libraries use the Encryption Kit

3 Determining the master and lower Library



The Library Extender is installed with two HP StorageWorks MSL Tape Libraries to combine the cartridge and tape drive slots into a single extended library.

The upper Library controls the extended library and is called the *master* Library. The extended library uses the master Library's operator control panel (OCP), USB port, and Ethernet connection.

The lower Library is operated by the master Library. Its OCP, USB port, and Ethernet connection are not used in the extended library configuration.

The upper Library must be an MSL4048 or MSL8096. The lower Library can be an MSL2024 or MSL4048.

Master (upper)	Lower
MSL4048 or MSL8096	MSL2024 or MSL4048

4 Saving the Libraries' configurations

When the extended Library is configured, many of the individual Libraries' configuration settings are lost. If you might want to recover their configurations, for example to separate the Libraries in the future, save the Library configuration for each Library to a file. See the *HP StorageWorks MSL2024, MSL4048, and MSL8096 User and service guide* for instructions on saving the Library configuration.

5 Upgrading the Libraries' firmware

Both Libraries must have firmware that supports the Library Extender, and the firmware versions for the two Libraries must be compatible with each other. To ensure that the Libraries have firmware versions that support the Extender and are compatible, verify that each Library has the latest released version of firmware. Update to the latest firmware if necessary.

To find the version of firmware installed on the Library, see the **RMI Support: Firmware** screen.

From the MSL4048 or MSL8096 operator control panel (OCP), navigate to the **Info > Identity > Library** screen. The **Library Controller FW Revision** field shows the Library firmware revision.

From the MSL2024 OCP:

1. From the Home screen, press **Next** until the display shows **Status/Information**. Press **Enter**.
2. Press **Next** until the display shows **Library Information**. Press **Enter**.
3. Press **Next** until the display shows the **Firmware Rev.**

To find the currently available firmware revisions that support the Library Extender, visit the <http://www.hp.com/support> website and search for **Library Extender**. Select the **HP StorageWorks MSL Library Extender** and download the most recent firmware revision for each Library.

See the *HP StorageWorks MSL2024, MSL4048, and MSL8096 user and service guide* for instructions on updating Library firmware.

6 Enabling extended mode

Enable **Extended Mode** from the **RMI Configuration: System** screen or **OCP Configuration > Library** menu in both Libraries before installing the Library Extender.

NOTE:

Extended mode will be enabled but not active until the Library is powered off and then powered on.

7 Removing the cartridges from the Libraries

Before installing the Extender, the Libraries must be installed in the rack rails supplied with the Libraries in adjacent rack locations, one Library directly above the other.

Skip this step if you do not need to move a Library.

⚠ WARNING!

When the Library is moved, any cartridges in the Library can become dislodged from the magazines and damage the cartridges and Library robotics. To avoid damaging the Library, remove the cartridges before moving the Library.

Use the OCP or RMI to open the magazines and remove the tapes from the Library. The magazines with the tapes in them may also be removed from the Library.

See the *HP StorageWorks MSL2024, MSL4048, and MSL8096 user and service guide* for instructions on opening or removing the magazines.

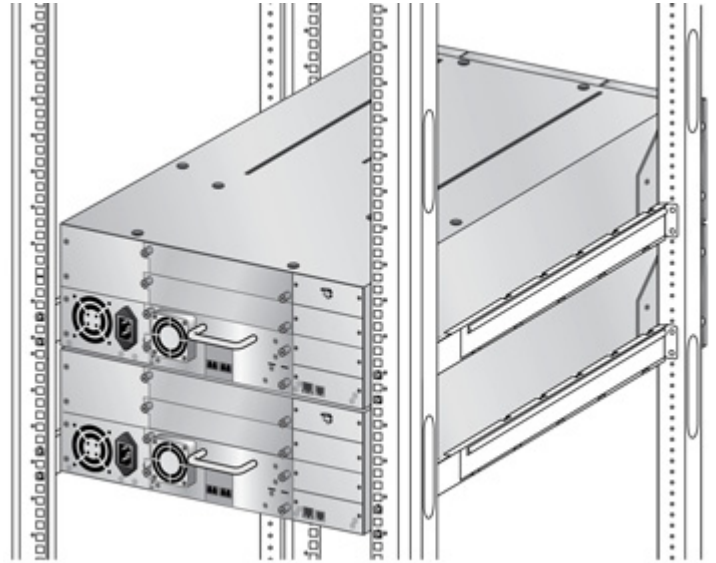
8 Powering off the Libraries



11964

Press the power button on the front panel to power off each Library.

9 Positioning the Libraries in a rack



11976

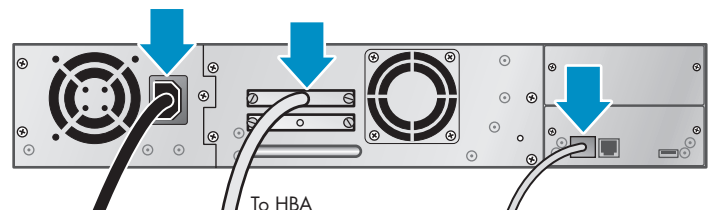
Before installing the Library Extender, the two Libraries must be installed in a rack in the rack rails supplied with the Library and the master Library must be installed directly above the lower Library in the adjacent rack location as shown in above. If you do not need to move one or more of the Libraries, skip to [Step 10. Relocating tape drives](#), page 5

If one or both Libraries are mounted in a tabletop conversion cover, remove the cover and install the Library in the rack in the rack rails supplied with the Library. If one or both Libraries needs to be moved in the rack, remove the Library and its rack rails from the rack and install the rails and Library in the necessary rack location.

📝 NOTE:

If the Library Extender is near the rear rack door latch, you might need to move the Libraries to a different rack location to close and latch the rack doors.

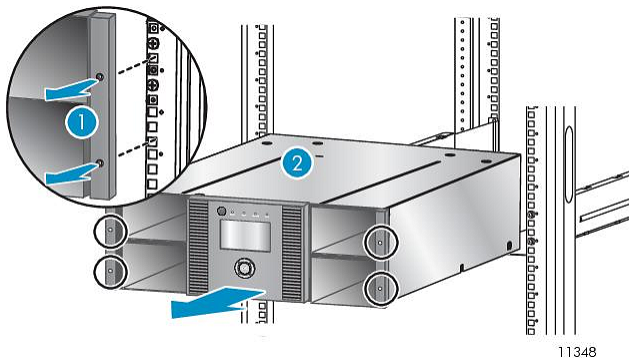
Removing a Library from a rack or tabletop conversion cover



11403

Unplug the power cord from the wall outlet. Remove the power cord from the Library.

Remove all other cables from the Library.



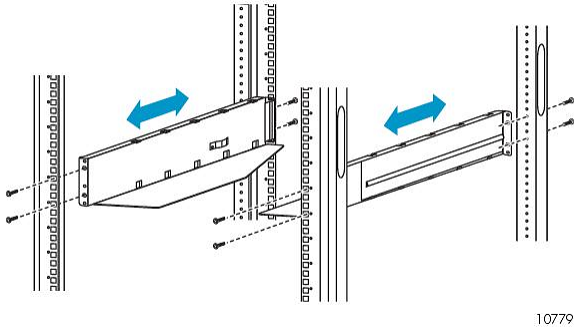
Obtain adequate assistance to lift and stabilize the Library during removal and replacement.

From the front of the Library 1) completely loosen the screws inside the left and right front bezel (these are captive screws and cannot be removed), then 2) slide the Library out of the rack or cover using assistance.

⚠ CAUTION:

Lift the Library from the side edges. Lifting the Library from the magazine or drive openings, or from the drive handles can damage the Library.

Moving the rack rails and clip nuts

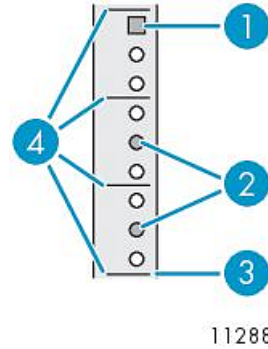


Using a #3 Phillips screwdriver, remove the rails from the rack. For an MSL4048 or MSL8096 also remove the clip nuts.

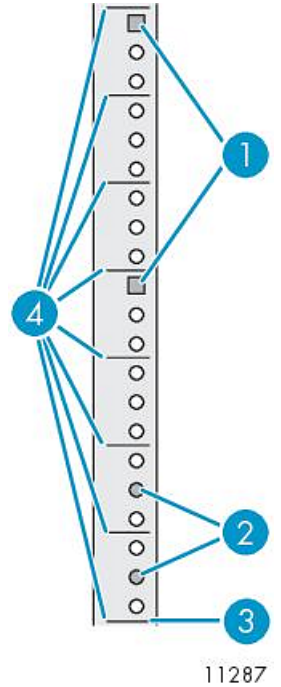
Secure one rail to each side of the rack in the new location. Secure the front and the back of each rail to the rack. The front of the rails is straight and the back is angled.

Moving the clip nuts

MSL4048



MSL8096



1. Clip nut location

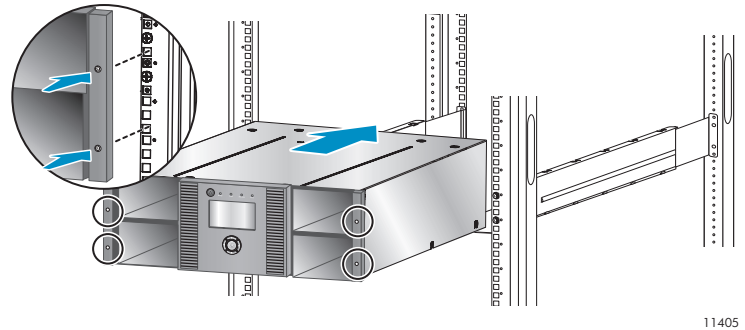
2. Rail screw location

3. Library bottom

4. U marker

For the MSL4048 and MSL8096, replace the clip nuts in the locations shown.

Installing the Library in the rack rails



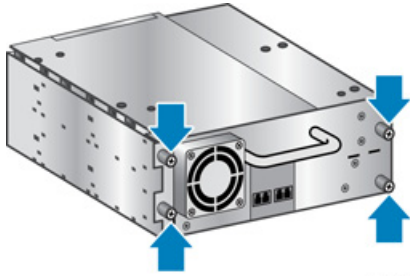
With assistance, slide the Library onto the metal rails. Secure the front bezel to the rack using a #2 Phillips screwdriver placed through the small holes in the mounting bracket to tighten the captive screws on each side of the Library.

Replace tape cartridges and magazines in the Library.

10 Relocating tape drives

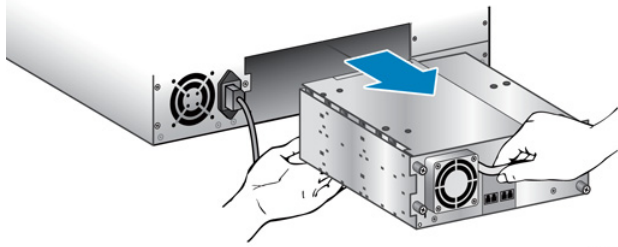
The extender is installed in the bottom half-height drive bay of the upper Library and the top half-height drive bay in the lower Library. If a tape drive is installed in either of these drive bays, relocate the tape drive to another drive bay.

Verify that the Library is powered off.



11933

To remove a tape drive from its current location, loosen the blue captive thumbscrews on the tape drive.



11932

Pull straight back on the tape drive handle while supporting the bottom of the tape drive to remove it from the Library.

If necessary, remove one or two drive bay covers from the destination drive bay.

Slide the tape drive into its new drive bay. Tighten the blue thumbscrews with your fingers to secure the tape drive in the Library.

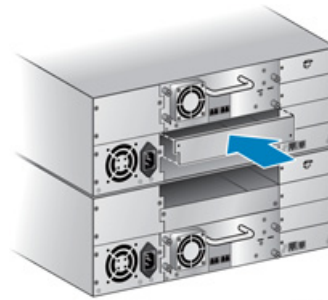
If you removed a tape drive and are not reinstalling it in a Library, store it in an anti-static bag.

11 Removing and replacing drive bay covers



11926a

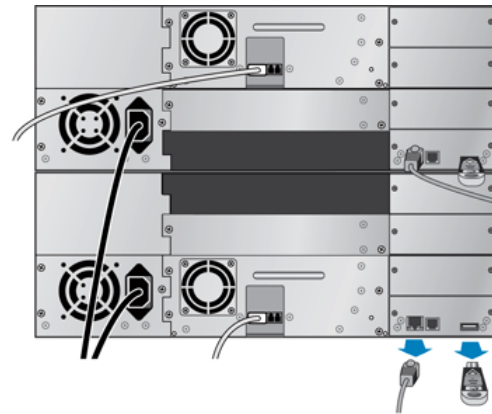
If necessary, use a #1 Phillips screwdriver to remove the bottom half-height drive bay cover from the upper Library and the top half-height drive bay cover from the lower Library to create a space for the Library Extender.



11926b

Install drive bay covers over any drive bays that are not used by a tape drive or the Library Extender. Two half-height drive bay covers are supplied with the Library Extender for this purpose.

12 Removing the USB device and Ethernet cable from the lower Library

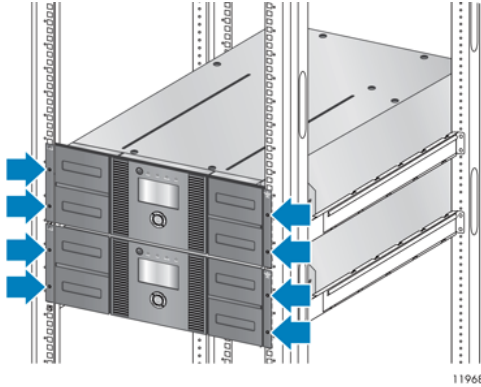


11927

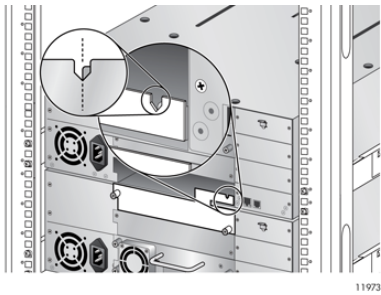
Remove the Ethernet cable and USB device from the lower Library. When the Library Extender is installed, only the Ethernet and USB ports in the upper Library are active.

13 Aligning the Libraries

Before installing the Extender, the Libraries must be aligned horizontally.



Loosen each of the captive screws inside the left and right front bezels that attach the Libraries to the front of the rack 1/2 turn. Loosening the screws in this manner allows the Libraries to be aligned horizontally while retaining the necessary reference to the front of the rack. (These screws will be retightened later in the procedure.)

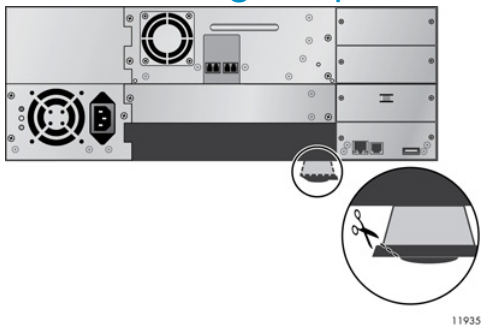


Secure the alignment gauge to the top half-height drive bay in the lower Library by tightening the two thumbscrews with your fingers.

Adjust the horizontal alignment of one or both Libraries until the edge of the chassis tab is aligned with the center of the V in the notch of the alignment gauge.

Gently remove the alignment gauge without moving either of the Libraries. Save the alignment gauge for future use if the Libraries are moved or the Extender is installed with other Libraries.

14 Extending the pull-out tab



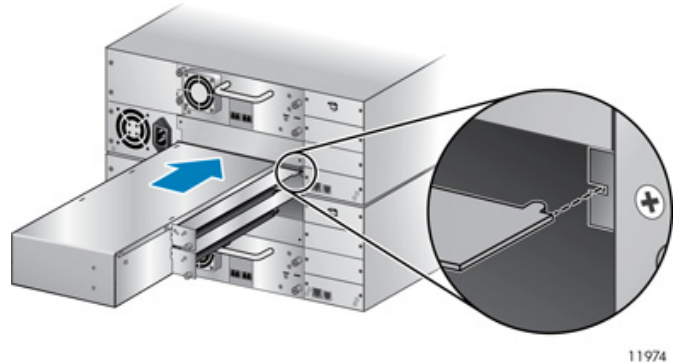
On the upper Library, fully extend the pull-out tab containing product information.

If the tab has a plastic extension on both sides, clip the left extension, as shown, without removing the product information. Leave the tab pulled out while installing the Extender.

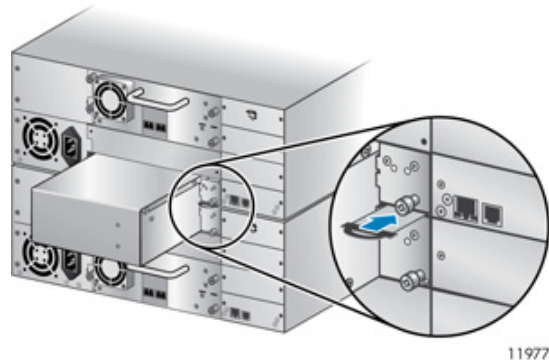
15 Installing the Extender

⚠ WARNING!

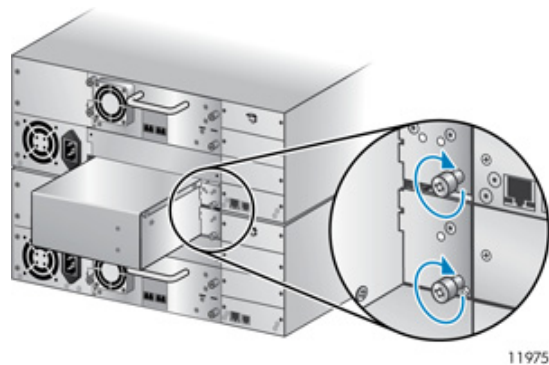
To avoid damage to the Libraries and Extender, verify that both Libraries are powered off before installing the Extender.



Align the upper tab on the side of the Extender with the slot in the upper drive bay and slide the Extender into the Libraries.



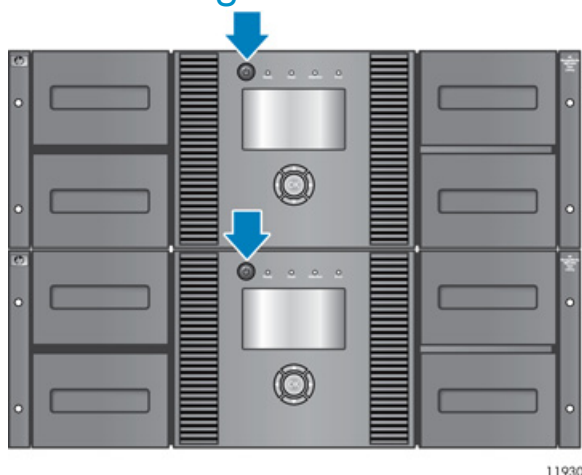
When the Extender reaches the pull-out tab, thread the pull-out tab through the slit in the Extender attachment plate so the plastic extension of the pull-out tab is outside of the Extender. This will allow the Extender to seat completely and allow the information on the tab to be viewed after the Extender is installed. Slide the pull-out tab into the Library.



Tighten the two thumbscrews on each side of the Extender with your fingers or a #1 Phillips screwdriver to secure the Extender to the Libraries.

From the front of the Libraries, tighten the captive screws inside the right and left front bezels that were loosened earlier in the procedure.

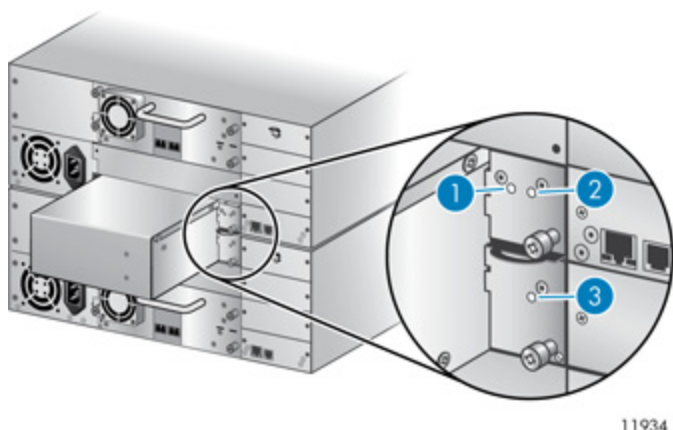
16 Powering on the extended library



Power on both Libraries. The Libraries can be powered on in either order. The initialization sequence is faster when the lower Library is powered on first.

NOTE:
The Library Extender receives power from the Libraries; it does not have its own power cord or power button.

Check the LEDs



- | | |
|--|--|
| 1. Library Extender power status | Green when the master Library is powered on and the Extender is installed correctly. |
| 2. Master Library connection and Library Extender status | Green when the Extender is operating correctly. Flashing when the Extender has failed with a hard error and is no longer functional. |
| 3. Lower Library connection status | Green when the lower library is powered on and the Extender is installed correctly. |

All three LEDs will be green when the Extender is installed correctly and functional. Check the LEDs on the Extender to verify that the Extender is operating correctly.

Magazines and mailslots

Magazine and mailslot numbering begins with the lower Library and continues with the master (upper) Library.

Storage slot numbering

Extended Library Configuration		Slot numbers (without mailslots enabled)	
Lower Library	Master Library	Lower Library	Master Library
MSL2024	MSL4048	1–24	25–72
MSL4048	MSL4048	1–48	49–96
MSL2024	MSL8096	1–24	25–120
MSL4048	MSL8096	1–48	49–144

Mailslot numbering

The mailslots in both Libraries can be configured for use in the extended library.

Extended Library Configuration		Mailslot numbers (with all mailslots enabled)	
Lower Library	Master Library	Lower Library	Master Library
MSL2024	MSL4048	M1	M2–M4
MSL4048	MSL4048	M1–M3	M4–M6
MSL2024	MSL8096	M1	M2–M16
MSL4048	MSL8096	M1–M3	M4–M19

Tape drives

Tape drives are numbered starting with the lower Library and continuing with the master Library.

Any tape drive in the extended Library can host the SCSI Library interface. The default is the lowest tape drive in the lower Library.

Power supply redundancy

Both Libraries must have a working power supply for the extended library to operate. To have total power supply redundancy, both Libraries must have working redundant power supplies. In an extended library, if only one Library has redundant power supplies installed, the extended library will continue to operate in case of a power supply failure in that Library. An extended library containing an MSL2024 cannot have total power supply redundancy because the MSL2024 only has one power supply.

17 Configuring the extended library

The extended library appears to the host as a single library. The upper Library is always the master Library.

Default settings

Setting	Default for the extended library
Administrator password	Retained from the master Library
Mailslot configuration	All mailslots are disabled
Network settings	Retained from the master Library
Barcode format reporting	Retained from the master Library
Reserved slots	Reserved slots are set to 0
SCSI master drive	Lowest physical drive in the extended library
SCSI tape drive addresses	Retained by both Libraries.
Contrast setting (MSL4048 and MSL8096)	Retained by both Libraries.
Library mode	Automatic
Autoload	No
Loop	No
Date and time	Retained from the master Library. The lower Library is synchronized with the master Library with every command in the extended library.
Drive power	All tape drives are powered on.
Auto clean	Retained from master Library
SNMP	Retained from the master Library. If SNMP is not configured for the master Library but is configured for the lower Library, the extended Library takes the settings from the lower Library.
Allow magazine access without a password	Retained from the master Library
Ignore barcode media ID	Retained from the master Library
Encryption	Enabled if encryption is enabled in either Library otherwise disabled.
Logical libraries (partitioning)	Disabled

Reserved slots

Reserved slots can be accessed by the RMI or OCP, but are invisible to the host and backup software. For example, you might keep a cleaning cartridge in a reserved slot if your backup software does not manage the cleaning process.

The maximum number of reserved slots is the total number of storage slots minus 2. For example, an extended library with two MSL4048 Libraries has 96 storage slots, allowing a maximum of 94 reserved slots.

18 Verifying the installation

To verify the installation, run the wellness test from the OCP **Support > Run Tests** screen. The wellness test will exercise all Library and drive functionality for the extended Library. Access to this test requires the administrator password.

Helpful websites

For other product information, see the following websites:

<http://www.hp.com/go/ebs>

<http://www.hp.com/go/tape>

<http://www.hp.com/go/storage>

<http://www.hp.com/support>

<http://www.hp.com/support/mslg3tstree>

<http://www.hp.com/support/TapeTools>

<http://www.docs.hp.com>

<http://www.hp.com>

HP technical support

Telephone numbers for worldwide technical support are listed on the HP support website: <http://www.hp.com/support>.

Collect the following information before calling:

- Technical support registration number (if applicable)
- Product serial numbers
- Product model names and numbers
- Applicable error messages
- Operating system type and revision level
- Detailed, specific questions

For continuous quality improvement, calls may be recorded or monitored.

HP strongly recommends that customers sign up online using the Subscriber's choice website: <http://www.hp.com/go/e-updates>.

Subscribing to this service provides you with e-mail updates on the latest product enhancements, newest versions of drivers, and firmware documentation updates as well as instant access to numerous other product resources.

After signing up, you can quickly locate your products by selecting **Business support** and then **Storage** under **Product Category**.

HP StorageWorks MSL Library Extender

Removing or replacing

The Library Extender is a mandatory customer self repair part. HP customer self repair (CSR) programs allow you to repair your StorageWorks product. If a CSR part needs replacing, HP ships the part directly to you so that you can install it at your convenience. For more information about CSR, contact your local service provider. For North America, see the CSR website: www.hp.com/go/selfrepair

© Copyright 2009 Hewlett-Packard Development Company, L.P.

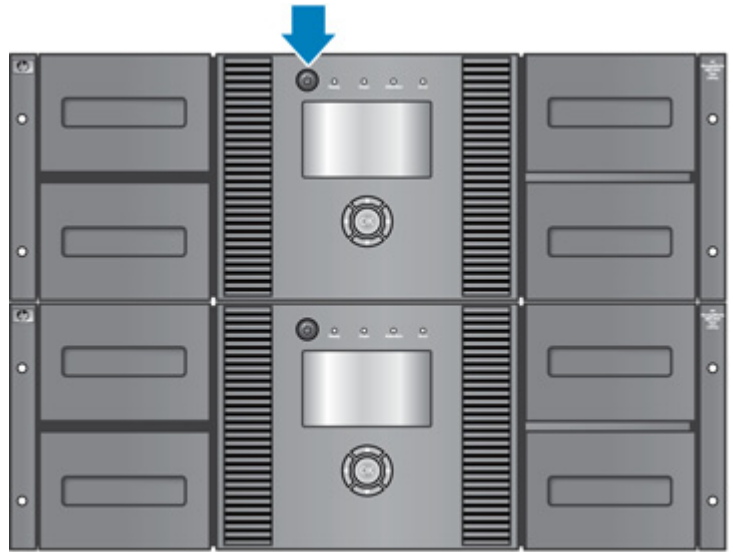
First edition: April 2009

The information in this document is subject to change without notice.

www.hp.com



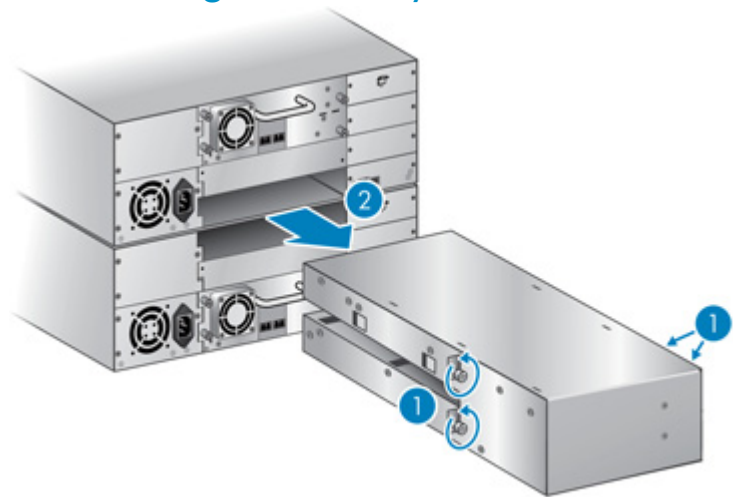
1 Powering off the Libraries



Press the power button on the upper Library to power off the extended Library. The top Library will park the Extender robotic and power off the lower Library.

If the lower Library does not power off after 5 minutes, depress the power button on the lower Library and hold it for at least 10 seconds.

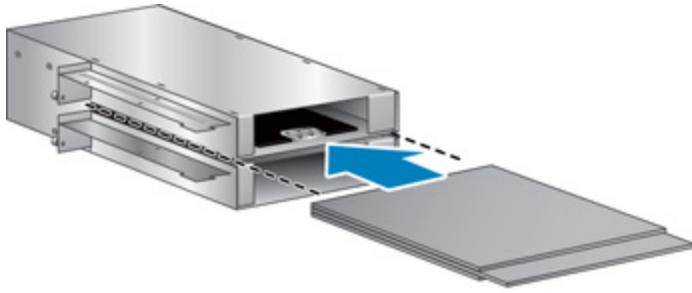
2 Removing the Library Extender



Using a #1 Phillips screwdriver, 1) loosen the four screws that secure the Extender to the Tape Libraries. 2) Pull the Extender straight out of the Libraries.

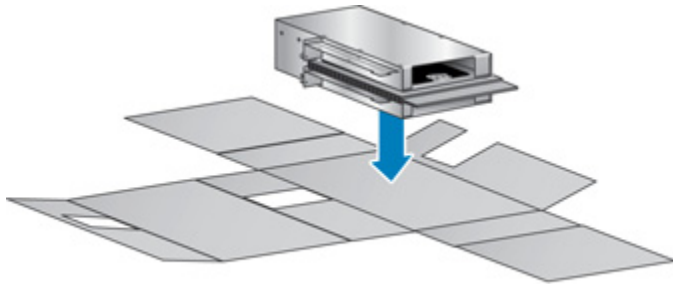
3 Repackaging the Library Extender

Follow these steps to package the removed Library Extender for return to Hewlett-Packard.



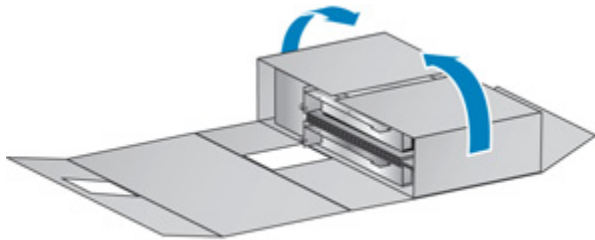
11953

Insert the cardboard support in the space between the top and bottom of the extender.



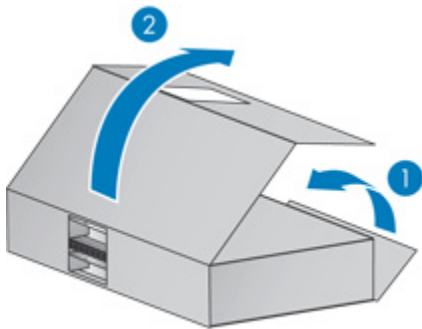
11954

Place the extender on the base position of the cardboard wrapper.



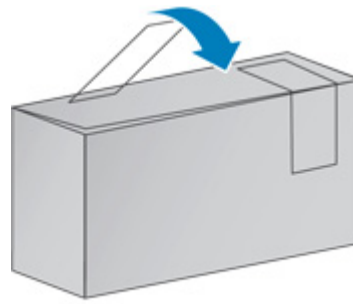
11955

Fold the tab on the cardboard support piece down, and then fold the ends of the wrapper over the front and back of the Extender.



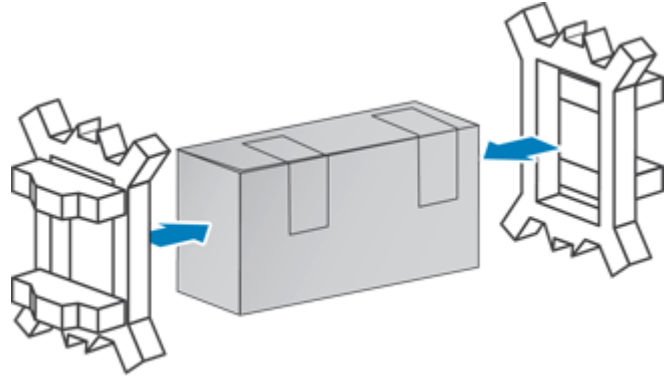
11956

Wrap the sides of the wrapper around the sides of the Extender.



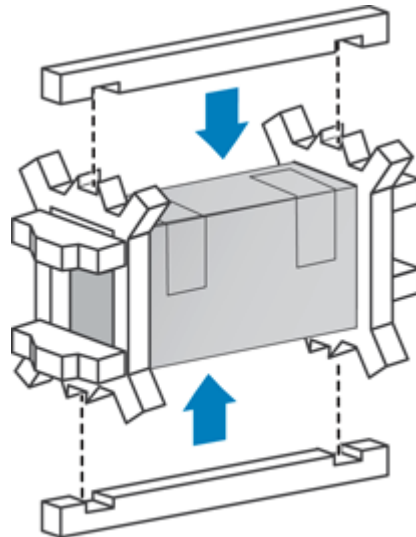
11957

Secure the wrapper with packaging tape.



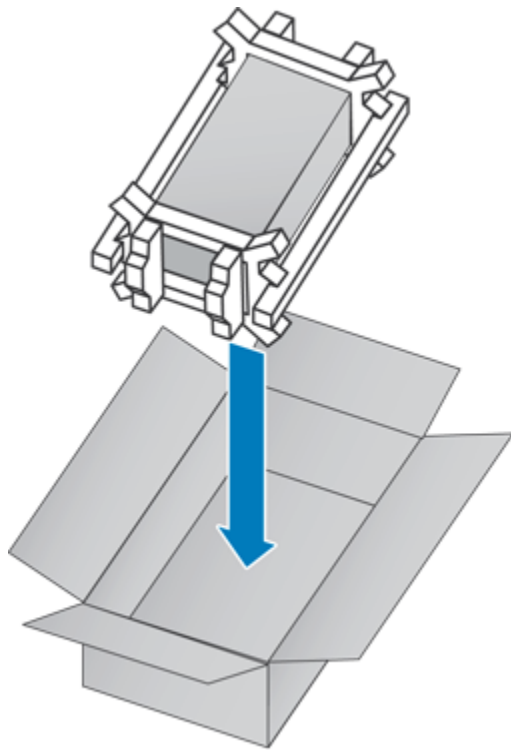
11958

Place the foam caps around the front and back of the Extender.



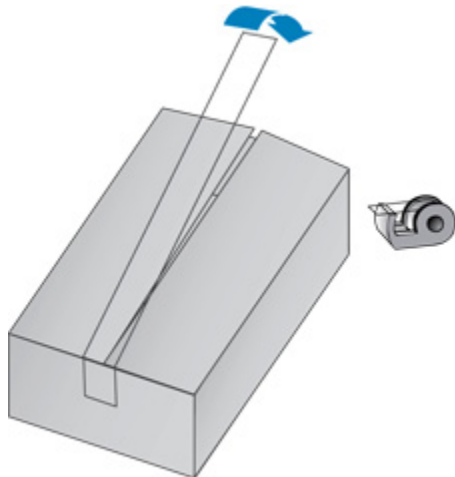
11959

Attach a foam side support on each side of the Extender.



11960

Place the protected Extender in the shipping box.



11961

Secure the box with packaging tape.

Replacing the Extender

To replace the Extender, continue with Step 13 on page 6 in the *Getting started guide* section of this document.

4 Preparing the Libraries to operate as separate Libraries

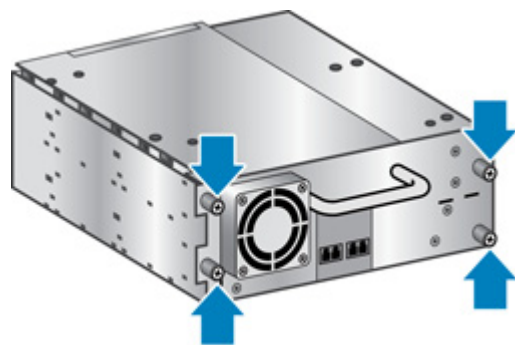
Follow the steps in the remainder of this document if you are reconfiguring the extended library into two separate Libraries.

Relocating tape drives

Each Library must have at least one tape drive. Skip this step if you do not need to relocate a tape drive from one Library to the other.

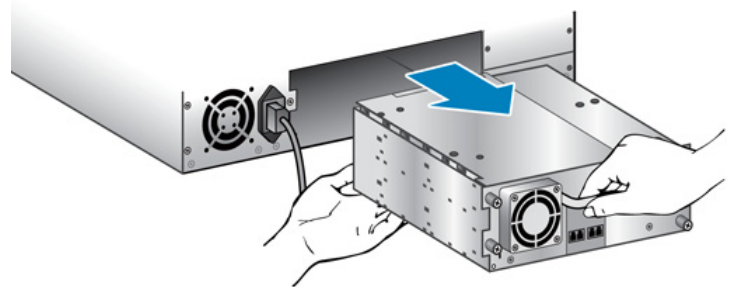
! IMPORTANT:

To avoid damage to the Library, ensure that the tape drive is powered off before removing it from a Library.



11933

To remove a tape drive from its current location, loosen the blue captive thumbscrews on the tape drive.



11932

Pull straight back on the tape drive handle while supporting the bottom of the tape drive to remove it from the Library.

If necessary, remove one or two drive bay covers.

Slide the tape drive into its new drive bay. Tighten the blue thumbscrews with your fingers to secure the tape drive in the Library.

Replacing drive bay covers

Use a #1 Phillips screwdriver to secure drive bay covers over any open tape drive bays.

5 Disabling extended mode

Power on both Libraries.

Disable **Extended mode** for both Libraries from their **Configuration > System** menus.

Power each Library off and then on for the configuration change to take effect.

6 Connecting the Ethernet cable

To use the RMI with the lower Library, insert one end of an Ethernet cable into the Ethernet port on the back of the Library. Plug the other end into an Ethernet LAN port.

7 Copying the key server token

Skip this step if the extended library is not using the HP StorageWorks 1/8 G2 and MSL Encryption Kit.

The encryption keys used to read and write encrypted data are stored on a USB key server token. In the extended library, all of the encryption keys are stored on the same key server token. When the Libraries are separated, each Library will need its own key server token with the keys to read tapes that were written by the extended Library.

To create a second key server token with the keys used by the extended library, follow the instructions for backing up the key server token data in the *HP StorageWorks 1/8 G2 and MSL Encryption Kit User guide*.

Insert the key server token into the USB port on the lower Library.

8 Reconfiguring the Libraries

When extended mode is disabled, each Library will have a mix of settings from the extended library, default values, previous values, and new values. Use the OCP or RMI to reconfigure each Library. See the *HP StorageWorks MSL2024, MSL4048, and MSL8096 Tape Libraries User and service guide* for more information about the settings and configuring the Libraries.

Settings retained from the extended library

The following settings are retained by both Libraries from the extended library:

- Administrator password
- SCSI tape drive addresses
- Fibre Channel drive settings
- Date and time
- Email notification
- Encryption — remains On if LTO3 or LTO4 tape drives are installed

Settings that are set to default values

The following settings are set to default values:

- Mailslot configuration — all mailslots disabled
- Reserved slots — no reserved slots
- Library mode — Automatic
- Autoload — No
- Loop — No
- Logical libraries (partitioning) — Off
- SCSI master drive — the lowest tape drive in each Library

Settings where the lower Library reverts to earlier values

For the following settings the upper Library retains the settings from the extended Library and the lower Library reverts to the settings it had before extended mode was enabled:

- Network settings
- Barcode format reporting
- Auto clean
- SNMP
- Log tracing configuration
- Allow magazine access without the Administrator password
- Ignore barcode media ID

Special cases

- OCP contrast setting (MSL4048 and MSL8096) — each Library retains the setting it had before extended mode was enabled
- Drive power — The Library that hosts the tape drive that was the SCSI master drive in the extended library retains the drive power settings from the extended library. In the other Library, all drives are powered on.